

### Abstract of the Disclosure

A wireless communication system with feedback and a method therefore, wherein the wireless communication system, which has a plurality of transmitting antennas and a plurality of receiving antennas through which signals are transmitted and received, respectively, includes: a transmitter that restores feedback information from a predetermined feedback signal, weights an information signal with the restored feedback information, and converts the weighted information signal to a radio frequency signal in order to transmit the radio frequency signal; and a receiver that receives the radio frequency signal to estimate the state of a channel, through which the radio frequency signal is transmitted, calculates a weight of a dimensionality corresponding to the number of the transmitting antennas, approximates the weight as lower-dimensional one to extract feedback information, and converts the feedback information into a radio frequency signal to send the radio frequency signal to the transmitter.